

Appl. No. 10/784,448
Amdt. dated November 10, 2005
Reply to Office Action of September 21, 2005

Remarks

The response replies to the final Official Action dated September 21, 2005. The Official Action rejected claims 1-9 under 35 U.S.C. 103(a) based on Acosta et al. U.S. Patent No. 6,783,072 ("Acosta") in view of McMaster U.S. Patent No. 6,520,415 ("McMaster"). This sole ground of rejection is addressed below following a brief discussion of the present invention to provide context. Claims 1-9 are presently pending.

The Present Invention

A checkout device according to one aspect of the present invention includes a bar code scanner for generating scan patterns. The bar code scanner also detects and decodes light generated from reflection of the scan patterns from bar codes. The checkout device may include an electronic article surveillance (EAS) system for deactivating security labels, with the EAS system preferably being positioned so as to deactivate a security label during scanning of an article bearing a security label. The scanner includes optical components such as a rotating reflective spinner and one or more sets of pattern mirrors for generating scanning light beams to create scan patterns. The scanner also includes an optical element for refracting scanning light beams striking the optical element, with the optical element being constructed and disposed so that a scan pattern traced out by the scanning light beams is displaced from a scan pattern that would be traced out in the absence of the optical element. The optical element may be chosen and placed so that the scan pattern is shifted to an effective location above the aperture of the

Appl. No. 10/784,448
Amdt. dated November 10, 2005
Reply to Office Action of September 21, 2005

scanner and may be chosen and placed to compensate for displacement of optical components required for accommodation of an EAS.

The Art Rejections

As addressed in greater detail below, Acosta and McMaster do not support the Official Action's reading of them and the rejections based thereupon should be reconsidered and withdrawn. Further, the Applicant does not acquiesce in the analysis of Acosta and McMaster made by the Official Action and respectfully traverses the Official Action's analysis underlying its rejections.

The Official Action rejected claims 1-9 under 35 U.S.C. 103(a) based on Acosta in view of McMaster. Acosta teaches a combined data reader and EAS system, with the data reader comprising various elements for forming and directing scan patterns and with an EAS deactivation module accommodated inside the data reader. The Official Action admits that Acosta does not disclose an optical element constructed and disposed to refract the scanning light beams reflected from the pattern mirrors in the bar code reader such that the scanning light beams trace out a scan pattern displaced from the scan pattern that would be traced out by the scanning light beams in the absence of the optical element.

McMaster fails to cure the deficiencies of Acosta as a reference. McMaster addresses the problem of reducing ambient illumination caused by light reflected off of a scanned item which degrades the signal to noise ratio detected by a photodetector in a scanning system. McMaster,

Appl. No. 10/784,448
Amdt. dated November 10, 2005
Reply to Office Action of September 21, 2005

col. 1, lines 55-60. McMaster's photodetector includes a photosensor, a lenticular array positioned between the photo sensor and a bar code, a plurality of lens elements for refracting reflected and ambient illumination, and a mask for blocking the received ambient illumination from impinging upon the photosensor. McMaster, col. 2, lines 46-58. In particular, McMaster employs the plurality of lens to refract illumination, generated from illumination reflected off the bar code, from a field of view towards the photosensor. The field of view has a width encompassing a sweep accross and a height less than the width. McMaster, col. 4, lines 44-48. McMaster does not teach and does not suggest an optical element for shifting scanning light beams which are directed towards a bar code.

Unlike McMaster, the present invention addresses a checkout device having a bar code reader, a security system, and an optical element in the bar code reader for shifting the scanning light beams to an effective location above the bar code reader's aperture. The optical element is constructed and disposed so as to refract the scanning light beams such that the scanning light beams trace out a scan pattern displaced from the scan pattern that would be traced out by the scanning light beams in the absence of the optical element. Claim 1 reads as follows:

1. A checkout device comprising:
a bar code reader including a housing having an aperture for emitting scanning light beams;
a security system in the housing and adjacent the aperture for deactivating security labels on scanned items; and
an optical element in the bar code reader for shifting the scanning light beams to an effective location above the aperture, the optical element being constructed and disposed so as to refract the scanning light beams reflected from pattern mirrors in the bar code reader such that the scanning light beams trace out a scan pattern displaced from the scan pattern that would be traced out by the scanning light beams in the absence of the optical element. (emphasis added)

Appl. No. 10/784,448
Amdt. dated November 10, 2005
Reply to Office Action of September 21, 2005

As discussed at page 4, lines 1-9, for example, which describe the exemplary embodiment of Fig. 1, pattern-shifting element 38 optically moves the scanning light beams to an effective location, one more optimally suited for reading bar codes 42. One application of pattern-shifting element 38 is to accommodate retrofit installation of EAS system 24 into a checkout device or bar code scanner not originally designed to include EAS system 24. See, page 4, line 29 – page 5, line 8 and Fig. 2, for example.

McMaster and Acosta, separately or in combination, do not teach and do not suggest an optical element “constructed and disposed so as to refract the scanning light beams reflected from pattern mirrors in the bar code reader such that the scanning light beams trace out a scan pattern displaced from the scan pattern that would be traced out by the scanning light beams in the absence of the optical element,” as claimed in claim 1. Acosta merely addresses a combined data reader and EAS system where an EAS deactivation module is accommodated inside the data reader. McMaster merely addresses the totally different problem of reducing ambient light from light reflected off of a bar code. See also claims 5, 7, and 9. Even if Acosta and McMaster were combined as suggested, the combination would still fail to meet the features of the claims. Such a combination would result in a combined scanning and EAS system with a photodetector receiving reduced ambient light.

The Official Action relies on McMaster at col. 8, line 52 – col. 9, line 2 and Figs. 7(a) and 7(b) for purportedly teaching refracting of scanning light beams in order to trace out a scan pattern displaced from the scan pattern that would be traced out by the scanning light beams in the absence of the optical element. Applicant respectfully disagrees. At that cited portion of

Appl. No. 10/784,448
Amdt. dated November 10, 2005
Reply to Office Action of September 21, 2005

text, a lens element for refracting reflected illumination in a way so that the intensity is greater at the center of a horizontal field of view incident to a photosensor is described. Utilizing a lens in this manner does not teach and does not make obvious an optical element "constructed and disposed so as to refract the scanning light beams reflected from pattern mirrors in the bar code reader such that the scanning light beams trace out a scan pattern displaced from the scan pattern that would be traced out by the scanning light beams in the absence of the optical element," as claimed.

In addition to the above discussed reasons for patentability, claim 5 further addresses a particularly advantageous application for shifting a scan pattern. Claim 5 addresses the particular application of retrofitting an EAS system into a checkout device that originally did not have one. During the retrofitting process, a pattern generating element may be required to be lowered into the housing of the checkout system in order to make room for the EAS system. The optical element as claimed provides advantageous shifting of the generated scan lines from the lowered pattern generating element in order to restore scanning effectiveness. Claim 5 reads as follows:

5. A checkout device comprising:
 - a bar code reader including a plurality of pattern mirrors for producing a scan pattern of scanning light beams and a housing having an aperture for emitting the scanning light beams;
 - a security system above the pattern mirrors and adjacent the aperture for deactivating security labels on scanned items;
 - wherein the pattern mirrors are designed to be placed in an original position located at a first distance away from the aperture and produce a first pattern, but have instead been relocated to be at a second distance away from the aperture in order to accommodate installation of the security system in the housing, the relocation of the pattern mirrors causing them to produce a second pattern displaced from the scan pattern that would be produced if the pattern mirrors were deployed in their original position; and

Appl. No. 10/784,448
Amdt. dated November 10, 2005
Reply to Office Action of September 21, 2005

an optical element in the path of the scanning light beams for shifting the second pattern to produce a third pattern, the optical element being constructed and disposed so as to refract the scanning light beams reflected from the pattern mirrors in the bar code reader such that the scanning light beams trace out a scan pattern displaced from the scan pattern that would be traced out by the scanning light beams in the absence of the optical element, the displacement being such that the scan pattern that is traced out is in substantially the same position as a scan pattern that would be produced with the pattern mirrors in their original position and in the absence of the optical element; wherein the third pattern is substantially as effective as the first pattern. (emphasis added)

McMaster and Acosta, separately or in combination, do not teach and do not suggest relocating a pattern of mirrors to accommodate installation of security system as claimed in claim

5. McMaster and Acosta, separately or in combination, do not teach and do not suggest displacing a scan pattern "in substantially the same position as a scan pattern that would be produced with the pattern mirrors in their original position and in the absence of the optical element," as claimed in claim 5.

Conclusion

All of the presently pending claims, as amended, appearing to define over the applied references, withdrawal of the present rejection and prompt allowance are requested.

Respectfully submitted,



Peter H. Priest
Reg. No. 30,210
Priest & Goldstein, PLLC
5015 Southpark Drive, Suite 230
Durham, NC 27713-7736
(919) 806-1600